Crop duster kerfuffle | Carr Fire rebuild | Writing tips | Safety resources

# CLOSED Circuit

WESTERN AREA POWER ADMINISTRATION JULY 2021

## Onward and upward



CLOSED Circuit

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## On the cover

*WAPA's Small Unmanned Aircraft System pilot program learned how these units can be used when surveying and inspecting transmission lines, increasing both safety and efficiency. Read the full story on Page 1. (Photo by **David Katich**.)*

# WAPA's sUAS pilot program lifts off

By Aidan Wiese
Photos by David Katich

In March, WAPA's Small Unmanned Aircraft System, or sUAS, pilot program reached its conclusion. These units can be used when surveying and inspecting miles of transmission line, saving both time and money, as well as preserving one of WAPA's most valuable assets: the safety of its workers and linemen.

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**Small Unmanned Aircraft System units can reduce the time spent on many maintenance tasks from hours to minutes, all while keeping transmission lines energized.**

Small Unmanned Aircraft System units save time and money and could potentially benefit many other WAPA programs.

The biggest benefit of the pilot program comes from integrating Small Unmanned Aircraft System units into WAPA's maintenance operations, reducing the risk in climbing for craft employees.

The program, which won an Inclusion, Innovation and Technology Award last year, initially began in April 2018. At the time, three linemen volunteered to study and pass the Federal Aviation Administration Remote Pilot License requirements, which would allow WAPA to legally fly unmanned aircraft within line-of-sight operations.

For more information, see "Taking to the skies saves maintenance dollars" in the December 2019 issue of *Closed Circuit*.

The sUAS program was specifically intended to explore potential ways to use unmanned aircraft in the organization, develop use cases and test their practical applications in the field.

The pilot program successfully determined a number of potential applications for the devices, such as inspection-related tasks for transmission lines and substation equipment. They may also prove to be useful when it comes to vegetation management.

"Those were all the use cases we explored when we were doing the sUAS program and found that all those were beneficial," said High Voltage Electrician **David Katich**, who regularly works with this equipment.

As reported in the program's March 21 conclusions document, the single biggest benefit of the sUAS pilot program involves integrating the unmanned aircraft into WAPA's maintenance operations, reducing the risk in climbing for craft employees.

"Instead of having to climb the structure to look down on it, we're able to use the sUAS," said Katich. "The device is able to look down on the structure rather than look up from the ground. That's beneficial because you get a more thorough inspection. From the ground during an asset inspection, we see 80-90% of a structure, but the top 10-20% is where the sUAS comes in, because that can only be inspected looking down. We're looking at the top of crossarms and insulators."

The use of sUAS units drastically reduces the time required for a job, as well as the number of outages required when performing routine maintenance.

In one instance, at Glen Canyon Substation in Page, Arizona, an sUAS was used to inspect and evaluate the top of the 345-kilovolt power transformers using visual imagery. Without the sUAS, the job could have required up to three different outages in addition to the use of aerial lifts and, of course, the use of proper fall protection.

Work on this scale also requires numerous employee hours to schedule the outages, perform the switching, testing and installation of grounds and inspect the transformers themselves. Ordinarily, this task could take up to 90 employee hours. Using a small unmanned aircraft, the inspection was completed in 15 minutes, all while the line remained energized.

"It eliminates the linemen having to climb any structure if there's something to just be inspected," said Aviation Manager **Richard Westra**. "If there's any required maintenance, obviously it doesn't. But if there's a question about any structure, a perimeter, a fence, anything you can't see from the ground, that's what this piece of equipment is used for."

It can also be used to examine suspected damage from gunshots or lightning strikes on a structure.

Additionally, the devices are useful for verifying the sizes of conductor wires. The North American Electric Reliability Corporation requires that utilities verify the actual conductor wire sizes in the field and compare

them to those listed in regulations for accurate thermal ratings.

Using sUAS units, crews were able to physically verify all of the wire sizes on crimps at Flagstaff Substation in Arizona in around 10 minutes, without outages or the need for climbing.

According to Katich, the devices were additionally put to great use during the Desert Southwest facilities ratings verification process, when they were used to verify switch nameplates and conductor jumper sizes.

"We verify the conductor jumper sizes by reading the nomenclature on the dead-end paddles," he said. "The benefit is that we didn't have to take bus outages at a substation, where we basically have to turn half the substation off or use aerial lifts and bucket trucks."

Another benefit comes from streamlining the process when there are needs for proof or documentation of damage before making repairs.

The devices were also used to investigate customer complaints regarding loud popping noises near Granby Substation in Colorado. The sUAS was able to fly within inches of the energized conductor and discover that it was damaged as it was being pulled over a malfunctioning traveler. This gave WAPA the documentation required for warranty work to replace the malfunctioning conductor.

"Drones are not there to replace; they're there to enhance," Westra explained. "They are not going to change the need for helicopter inspection or for the linemen climbing the tower. It's just enhancing the process. In the past, we might think we have a problem and need to verify it, but now the lineman can verify what he's looking at from the ground."

Aside from the decreased risk to craft employees and the time savings, the devices also offer a large monetary benefit. The total cost for the pilot program, not including the labor, came out to $12,253. This includes the cost of the units themselves, the software subscription, the drone pilot license test preparation course, additional batteries and FAA registration costs.

This compares favorably to the traditional costs of field work. In one instance, inspections were performed for spacer replacements on 25 towers on a 345-kV transmission line in Craig, Colorado, using conductor carts.

With an estimated rate of approximately $150 per hour for a lineman, an sUAS would take about half an hour to perform the inspection, including travel to each tower. For 25 towers, taking up about 12.5 hours, that would cost about $1,875.

However, if the inspections were done via climbing, the same task would require three linemen, each spending about an hour at each tower. For 25 towers, that would require 75 hours of employee time and cost about $11,250. That alone is nearly the entire cost of the pilot program.

Aviation has already procured 10 IT-approved, American-manufactured sUAS units in addition to the three used in the pilot, with plans to expand further from there.

"The end goal for the program, what we envision, is for there to be an sUAS on every line crew and at every manned substation for craft personnel to use," says Katich.

"I want to thank the many contributors from Aviation, Maintenance and IT, who have worked very hard to advance the program," said Executive Vice President and Chief Operating Officer **Kevin Howard**, the program's sponsor. "We have also received great advice and guidance from our Office of General Counsel. The team has continuously adapted to challenges and the program has expanded significantly over the past year or two, reaching all of WAPA's regions and providing a very cost-effective tool that helps us maintain system reliability while minimizing safety risks."

Westra invites any programs or departments to contact him if they feel they could benefit from an sUAS.

"I think almost every department within WAPA could use it," he said. □

*Note: Wiese is a secretary who works under the MIRACORP contract.*

**Aviation has procured 10 Information Technology-approved, American-manufactured Small Unmanned Aircraft System units in addition to the three used in the pilot, with plans to expand further from there.**

**WAPA crews mobilized quickly when a crop duster struck a transmission line in Yuma, Arizona, damaging it before flying off.**

# Crop duster strikes Arizona T-line

Photos by Mike Simonton

Crop dusters do more than apply insecticide and torment Cary Grant. They also, on occasion, find themselves in unfortunate altercations with transmission lines. Such was the case March 31, when a crop-dusting helicopter struck the Gila-to-Knob 161-kilovolt transmission line in Yuma, Arizona, at around 6 p.m., causing a service interruption.

By 6:30, Foreman II Lineman **Justin Swires** was on site to assess the situation and the damage. He reported his findings back to Dispatch, including the fact that the helicopter had neither crashed nor landed; the pilot who struck the line continued flying. While it was obviously good that the incident did not result in any injuries, it was up to WAPA to get power restored as quickly and safely as possible.

One complication was that repairs and service restoration would require access to the nearby Fort Yuma-Quechan Reservation, which would require approval from the Tribe.

Transmission Lines and Substations Maintenance Manager **Mike Simonton** worked to get in touch with a representative of the Tribe who could authorize access. By 9 p.m., he was able to do so, and was informed that the Tribe was both aware of the incident and happy to allow WAPA to make any necessary repairs on the reservation.

Within 15 minutes of this approval, WAPA crews were gathering the necessary equipment and mobilizing to address the outage.

Restoration efforts continued through the following morning, April 1, as the impacted transmission line was located on irrigated agricultural lands.

In addition to needing to tow in the equipment required to make the necessary repairs on soggy land, the crews had to be careful to avoid causing another kind of disruption.


**Repair efforts required coordination with the Quechan Tribe, as well as careful planning to avoid disrupting agricultural lands.**

## Get to know the Quechan Tribe

Quechan – pronounced "Kwatsáan" – means "those who descended." Their language is also called Quechan. The Fort Yuma-Quechan Reservation, which is considered the home of the Quechan Indians, is situated on both sides of the Colorado River near Yuma, Arizona, and is around 45,000 acres in size. Interstate 8 runs through the reservation, bringing several million travelers per year who drive through it on their way to Phoenix, Arizona, or San Diego, California.

For more information, visit **quechantribe.com**

"We wanted to mitigate the impact to agricultural activities," explained Simonton.

This required not only careful planning on WAPA's end, but additional coordination with the Quechan Tribe.

Supervisory Environmental Protection Specialist **Sean Berry** worked with the Quechan historic preservation officer regarding any environmental matters, and Realty Specialist **Angela Murphy** initiated discussions with adjacent landowners regarding efforts that could prove to be necessary post-repair.

The project involved the grounding and removal of the affected conductor, which required coordination with a neighboring utility. WAPA's crew partnered with them to lift the conductor above the distribution line and perform repair work over the road as opposed to on land, limiting the amount of heavy equipment needed in the agricultural fields and thereby minimizing disruption.

The repairs were successful and the line was placed back into service at around 4:30 p.m.

"This was yet another great effort by line crews, Dispatch, Environment and Lands," Simonton said afterward. "Thank you all for contributing to this team success!" □

# Civil engineer wins Emerging Leader Award

In May, Civil Engineer **Rebecca Afsar** received the Emerging Leader Award from RMEL – formerly the Rocky Mountain Electrical League – in Denver, Colorado.

"The Emerging Leader Award is RMEL's opportunity to recognize new talent in the industry from RMEL's member companies," said RMEL Executive Director Richard J. Putnicki in his announcement. "The award honors RMEL members with five to 10 years of industry experience who are making an impact through significant contributions within their organization and the electric energy industry."

"In just a few short years, Ms. Rebecca Afsar has become a 'student of the business' here at WAPA and embodies what it means to provide excellent customer service to our internal and external stakeholders," said Vice President of Asset Planning and Management **Chris Lyles**, who nominated her for the award. "Her excellent customer service is derived from her leadership skills and the ability to see an organizational opportunity for improvement and to actively develop solutions using a collaborative approach."

His praise did not end there.

"She is a true leader, as she is emotionally intelligent and leads with empathy and compassion," Lyles continued. "Her passion for WAPA and our industry can be witnessed in any project or initiative she is leading."

*Closed Circuit* sat down with Afsar to discuss the award.

> **A good leader's actions are motivated by a genuine desire to help others.**

**Tell us a little bit about your background.**

Before WAPA, I worked as a hydraulic design engineer with the Army Corps of Engineers and the Bureau of Reclamation. I performed hydrologic hazards analysis for dam and canal overtopping scenarios, designed instream salmonid habitat for cold water refuge, studied the impacts of climate change on irrigation cycles and helped develop their asset management's Major Rehabilitation and Replacement Database.

I also participated in the Federal Asset Management Working Group, where I met WAPA's Asset Management program managers.

**Can you explain your role at WAPA?**

I am a civil engineer in Asset Management who specialties in transmission line risk assessments and asset criticality analysis. My work focuses on engineering analysis to evaluate transmission infrastructure performance and provide tools to prioritize capital investment and improve maintenance practices.

I make sure that decision makers have the information and tools they need to measure and assess equipment performance, improve maintenance practices and develop capital budgets.

**How does it feel to be recognized this way by RMEL?**

I want to thank RMEL for the award and Chris Lyles for nominating me. I feel honored to receive the RMEL Emerging Leader Award, and I hope to continue to grow in my leadership skills at WAPA.

It has been a pleasure working within Asset Management, whose leadership team has allowed me to take on many challenging initiatives. I also want to thank my teammates who have helped me be successful in many of our projects.

**What has been your experience with RMEL?**

Before WAPA, my experience was in the water industry; therefore, RMEL has been an excellent organization to learn more about power utilities.

I have participated in the Fall Conference, learning more about asset management. In March 2019, I presented at the Transmission Planning and Operations Conference. In April 2019, I presented at the Electric Grid Security Conference on Developing Graduated Physical Security Protection Levels at Substations and Communication Sites.

At these conferences, I have been able to interface with many colleagues within the industry and have learned a lot.

**What is your definition of a good leader?**

I believe there are so many qualities that make a good leader, so here are just a few of my top ones. First, I think they need to have the ability to recognize and understand the feelings and emotions experienced by their team. A good leader's actions are motivated by a genuine desire to help others.

Second, a good leader must imagine the future and reconcile it with current realities. A good leader will know how to bridge the gap between where the team is and where they want to be.

Finally, I believe that a good leader can bring others together for a common purpose. They help create a sense of belonging on a team and help others feel like they are a part of something bigger than themselves. In essence, they develop a sense of community for their team.

**What is one piece of advice you have for WAPA employees wishing to grow and develop as leaders?**

My advice is to find a volunteer organization where you can begin your leadership journey in a low-stress, low-stakes environment.

I was elected president of my Toastmasters club. Our goal was to maintain and improve the club environment for individuals to practice and grow in their public speaking and leadership skills. I had a team of six volunteer officers to help achieve these goals. During this experience, I learned how to communicate my vision, develop a strategy and collaborate with six individuals to set goals and achieve success. I learned how to lead meetings, assign tasks to leverage others' strengths and how to motivate others to accomplish a common goal.

It was a critical environment because it was low stress and low stakes, but it taught me so many valuable lessons. It helped me understand that I like being a leader and that it might be something I pursue in my career. □


# Graduates reflect on DOE leadership program

In July 2020, five WAPA employees were selected to participate in the Department of Energy's Leadership Development Program, sponsored by the University of Maryland. With the recent conclusion of that program, *Closed Circuit* reached out to the participants to discuss their experience.

The eight-month program was designed as a career-development opportunity for new and current leaders. It focused on strategic alignment across all leadership levels, with the intention of driving transparency and accountability throughout the DOE.

Participants knew that the program would help them to develop critical leadership skills and improve their leadership competency proficiencies. What they were less certain about was the approach, which would necessarily take a virtual format due to the ongoing COVID-19 pandemic.

"I was expecting the Leadership Development Program to be a 'lecture' series, where the instructor would lead the attendees through the content," said Information Technology Specialist **Corinna Gonzalez**. "I was pleasantly surprised to find that the coursework encouraged a high amount of student engagement, both with the instructor and the other attendees."

She continued by saying she was surprised by how well the program still allowed for a feeling of fellowship.

"The format encouraged open and honest conversations in relation to the course material," she said. "I was grateful to be able to connect with each of my classmates."

Human Resources Specialist **Allison Burnett** agreed that, while the virtual format complicated things somewhat, there was still a strong feeling of togetherness and camaraderie.

"I feel as though we all came out of the program with strong relationships with other participants, who we will be able to rely on for support going forward," she said.

In addition, the program took a unique approach to its subject.

"This was not your typical leadership program," said Human Performance Program Manager **Krystall Valencia**. "The course covered how we, as leaders, go from 'self to symphony.' Within that, we learned about emotional intelligence for leaders, building a cohesive team and resilient leadership."

"I really expected this to be a very structured program focused on spreadsheets and change management," said Human Resources Specialist **Courtni Hively**. "I was pleasantly surprised to see the emphasis on 'self to symphony' which took us on a journey of better understanding who we are and how to effectively work with others, understanding our personalities, understanding that they may not also align with others, and how to use the strengths and weaknesses that we have identified within ourselves to lead teams."

"It was not what I expected," agreed Burnett. "I was thinking more along the lines of what it takes to be a leader, such as budgets and performance and so on, whereas this program taught us a lot about ourselves and how we can use our skills and traits to lead others."

IT Web Architect **Vitaliy Demchuk** said that he began the experience without any expectations at all.

"I went through the program with an open mind, willing to learn anything and everything," he explained. "And I wasn't disappointed."

Some of the specific topics the participants studied included active listening, empathy and building trust among team members. In addition, each of them found different aspects of the training especially compelling.

"We learned about effective communication within teams, which I found particularly valuable," said Gonzalez.

"One thing that I learned that I find to be valuable is that as a leader it is acceptable to be vulnerable from time to time," said Valencia.

Demchuk agreed, adding, "An environment where a leader is 'comfortable being uncomfortable' allows team members to admit weaknesses, share ideas and develop trust."

"I learned that to lead others, you have to first learn about yourself and your styles of leading and communication, in order to understand where others may be different, so that you can adapt and meet them in the middle," said Burnett. "What works for one may not work for others."

For Hively, the biggest takeaway was the Lencioni Trust Pyramid, which she said resonated with her the most.

"The five biggest pitfalls of a team are clearly mapped out in the model, so that people can work toward a successful and effective team," she explained. "Number two is Fear of Conflict, which reminded me that there should be no hesitation to disagree with, challenge and question one another. It is all in the spirit of finding the right solutions, finding the truth and making great decisions! Usually I would get kind of frustrated with conflict. Now I have changed my perspective, or remind myself to do so, and I think, 'What can I learn from this?'"

The program left the participants with much to consider as they develop their leadership skills, and they believe that they've been given useful tools with which to do so.

"The program put me in a position to carefully evaluate myself and my interactions with others, give more grace and thought to situations that I don't always agree with and better understand my personality," Hively said. "I can capitalize on the strengths and be aware of the possible blindsides."

"It helped me discover some leadership skills I didn't know I possess," said Demchuk. "It revealed different processes, tools and techniques that assist with developing new or enhancing existing leadership qualities."

"I am so grateful to WAPA for encouraging my participation in the Leadership Development Program," said Gonzalez. "My confidence as a leader has grown tremendously. I was able to connect with current senior leaders throughout the DOE, and as a result learned from their successes and how they bounced back from failure."

Overall, the participants felt their time with the program was beneficial, and would encourage others to attend this and similar trainings.

"As we entered into the last week I felt despondent, as I wanted additional time with the cohort," said Valencia. "I took so much away that I now have in my tool bag to apply in my position here at WAPA. I encourage emerging and existing leaders within the organization to apply for the course, as you unlock strengths and reflect on content in a different perspective."

"It was a great program," agreed Burnett. "I hope that I can take what I have learned and use it to be a great leader."

"I learned many valuable skills which I can use to make a positive impact on the organization," said Gonzalez. "I would absolutely recommend this training for those who are motivated to take an honest evaluation of themselves as leaders, and are open to change and self-improvement."

"Many people forget the importance of understanding oneself and the impact it has on working with others," added Hively. "I especially recommend this to supervisors and managers because their supervisory responsibilities are crucial to building and leading effective teams."

For Demchuk, the program also provided an opportunity to reflect on broader ideas, and to express his gratitude.

"Organizations that value leadership development are better at developing their leaders and placing the right people in the right roles which, in turn, drives greater innovation and stronger financial performance," he said. "I am glad WAPA is one of those organizations." □

# Firenado restoration and rebuild

By Amy Fischbach

This steel lattice tower on the Shasta-to-Cottonwood #2 transmission line near Keswick Dam in Redding, California, was destroyed during the Carr Fire that raged through Shasta and Trinity Counties in July and August 2018. (Photo by *Matt Monroe*)

Oftentimes, large forest fires are known to create their own wind and weather patterns. Whirlwinds of air and fire, called firenados, form near the edge of wildfires. Because they can quickly change direction, their movements are unpredictable, and their embers can rapidly spread wildfire to new areas.

***Editor's note:*** *This story originally ran May 3 in Transmission and Distribution World. It is reprinted here with permission. To see this story in its original context or to read other industry-related articles, visit* ***tdworld.com***

For example, high winds associated with the Carr Fire firenado completely destroyed three Western Area Power Administration 230-kV transmission towers on two different lines between Shasta Dam and the Cottonwood Substation. The firenado also took down the conductor on the Shasta-to-Flannigan line taking the circuit out of service. It knocked out WAPA's north area infrastructure artery, directly or indirectly impacting operations across the northern system in the Sierra Nevada region. The hardest hit area was near Keswick Dam to the northwest of Redding, California.

"Extreme heat mixed with high winds and cold air from the Sacramento River caused a firenado that resulted in catastrophic failure to everything in its path," says Foreman II Lineman **Ryan Yeager**.

## Installing temporary structures

The Department of Energy described the firenado's impact on one damaged line as "ripping the steel structures from the ground, resulting in tangled heaps of steel transmission towers, cars, trees and other debris."

After the firenado subsided, WAPA's SN line crews worked around the clock to complete the repair job. Due to high costs and long lead times from manufacturers, steel lattice towers had a limited availability. Using temporary wooden H-frame structures immediately available in SN yards, however, linemen worked to restore power as quickly as possible.

In emergency situations, WAPA usually responds with in-house mainte-

nance crews. WAPA can also reach out to mutual assistance partners for help to restore power. At the time of the Carr Fire, however, contractors and mutual aid were not available due to the devastation to the Pacific Gas and Electric Company, the City of Redding and Shasta Lake City. As such, WAPA responded to the outages with its own maintenance crews.

"Within 24 hours, WAPA line crews had the Shasta-to-Flannigan line energized, restoring power to Keswick Substation," Yeager says. "Within five days crews had cleaned up old towers, set new poles, strung wire and re-energized Shasta-to-Cottonwood 1 and 2."

## Preparing for permanent construction

Wood poles catch fire easily during intense forest fires and fall due to high winds dropping the conductor. This can cause a domino effect, toppling over poles and damaging lines. Steel lattice tower structures, which are predominantly used across WAPA's SN transmission system, are for the most part fire-resistant due to their all-steel construction. In the case of the Carr Fire firenado, however, the combination of extreme heat and high winds, comparable to an EF3 tornado, caused the steel lattice structures to suffer catastrophic failure.

In September 2020, linemen installed three permanent 100-foot tubular steel tower H-structures to match the height of the original lattice structures. But in the meantime, to keep wire height within North American Electric Reliability Corporation standards, WAPA used four temporary wooden spar-arm H-structures in place of three steel lattice towers destroyed in the blaze. Poles ranged from 70 feet to 90 feet tall. Engineers determined the proper wire heights, which dictated the temporary wooden H-structure height. Four H-structures were used in place of three towers to keep wire height up.

"The biggest challenge, besides the time crunch, was that we needed to keep the wire height up because of homes and driveways in the immediate area," Yeager said.

This style of construction is standard practice for temporary restoration because of its ease of construction and the availability of materials.

"This approach to temporary construction can be used on both transmission and distribution systems, making it the go-to in the industry," Yeager said.

## Lessons learned

Throughout the restoration and rebuilding process, the dedication and professionalism of WAPA's staff members at all levels ensured the success of its response to the wildfire and firenado.

"The Emergency Operations Center model worked well, and the ability to track and communicate real-time events was instrumental in our swift and strategic actions, which ensured our customers' interests were protected," says Field Maintenance Manager **Steve Tuggle**.

In addition, the operational support for the field crews, which ranged from addressing travel needs and purchasing equipment to arranging restoration schedules, was instrumental and resourceful.

"After the Carr Fire, SN had several meetings to acknowledge what worked well but also to discuss and develop areas for improvement," Tuggle says. "As a result, we have a summary and debriefing document that describes and tracks the actions to improve our response readiness moving forward."

## By the numbers

The Carr Fire was the seventh most destructive wildfire in California's history. Here are some other statistics, according to WAPA's *Closed Circuit* and the Department of Energy.

- 38,000 evacuations.
- 229,651 acres were affected.
- 1,604 buildings were destroyed.
- 11 injuries and eight deaths.
- 10 WAPA structures were down and 15 115-kV and 230-kV lines, six substations and 13 hydroelectric generators were out of service as a result of the Carr Fire, according to the DOE.

## Looking ahead

SN's approach to wildfire mitigation is to manage the electric system in a safe and reliable manner that minimizes the risk of wildfire posed by its electrical lines, substations, communication sites, compensation station and related equipment. Over the years, SN has developed and operated a robust and effective maintenance program, says SN's Vegetation Management and Access Roads Specialist **Ricardo Velarde**.

"Wildfire impacts continue to grow from year to year in California," he says. "In response, SN has identified potential wildfire risks and consequences within its service area and developed response strategies, which we have implemented region-wide while prioritizing activities within elevated fire risk areas identified by the state."

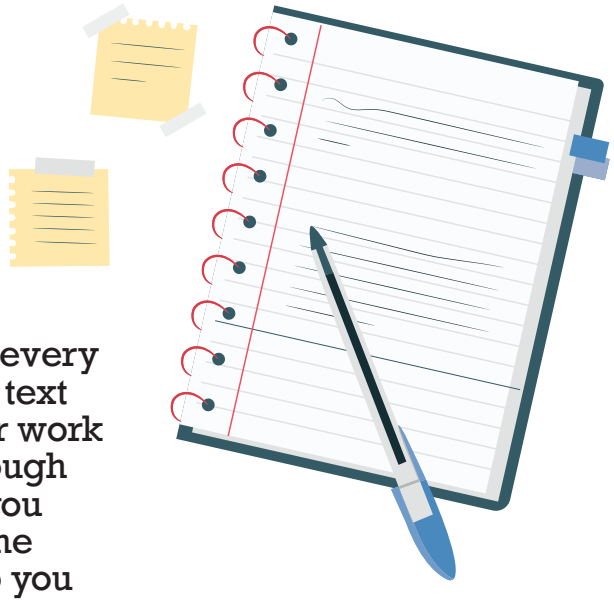
SN supplemented its maintenance personnel to conduct focused transmission line and right-of-way inspections and document fuel-load concerns. In addition, WAPA developed special inspection plans for equipment in elevated fire risk-areas where crews climb and inspect every tower for structural and equipment issues. The team performs a close visual inspection of the tower looking for any loose steel, bolts on the ground or any other aberrant condition.

SN has expanded the use of infrared and corona cameras for early identification of potential structural, equipment and related failures. In addition, SN is increasingly relying upon lidar, high-definition video, orthophotography and still imagery to develop a baseline for in-ROW and off-ROW conditions and to identify potential vegetation encroachments near powerline conductors. Through these proactive strategies and best practices from previous events, WAPA is ready to respond to future wildfires in its service territory. □

*Note: Fischbach is the contributing editor for the Electric Utility Operations section of Transmission and Distribution World.*

# Rewire your writing: tips to craft impactful pieces

By Eric Barendsen



Like it or not, you probably practice writing every day. Whether it's an email to a coworker, a text to a family member or an article about your work at WAPA, you frequently communicate through writing. Regardless of your role at WAPA, you should keep your writing tools sharp as a student of the business and lifelong learner. These 14 tips may help you do that more easily.

*Note: Barendsen is a public affairs specialist.*

## The approach

**Creativity cuts through the noise.**

Write something unexpected to capture people's attention. If you entertain or enrich your audience, they will be more likely to keep reading and share with their friends or coworkers.

"Rope's end, shoulders, song, all moved together, and life flowed in one stream." – Oliver La Farge, *Laughing Boy*

**Weave a compelling tale.**

Narrative stories stand out in a competitive universe of information. Snag your readers' attention from the opening sentences and reward them steadily throughout.

"124 was spiteful. Full of a baby's venom. The women in the house knew it and so did the children." – Toni Morrison, *Beloved*

**Get folks into your stories.**

Readers connect with the people in a story. Find a human-interest angle for your business story and show the experiences of those most involved in the work. If you can, go do the activity with someone, write down your observations and recreate your adventure for your audience.

**Detail oriented? Minds latch on to specifics.**

Concrete details boost understanding and help readers remember what you said. People recall things that elicit sensations or emotions. The more they can see and feel what you describe, the more they take away from the experience.

"It was inevitable: the scent of bitter almonds always reminded him of the fate of unrequited love." – Gabriel Garcia Marquez, *Love in the Time of Cholera*

**You don't have to be a famous writer to have fun writing; just plug in some of these tips, unwind your bad habits and rewire your everyday writing.**

**Put it simply.**

Choose shorter words and craft simpler sentences and paragraphs. You don't need technical jargon to explain complicated topics.

**Limit self-editing in early drafts.**

Write your first draft quickly, then cut larger pieces before fine tuning, as you approach a final draft. Listen to and learn from the feedback you receive.

## The structure

### Topple the inverted pyramid!

Don't start with background or boilerplate – or, even worse, "acronym soup" – about the organization. Avoid cramming the who, what, where, when, why and how into the first paragraph. Instead, use a feature story introduction: lead, nut graph and background.

Write your lead sentences with immediate, human-oriented specifics to catch attention. Don't shy away from using sentence fragments and swift, lucid images.

"I write this sitting in the kitchen sink." – Dodie Smith, *I Capture the Castle*

Then write your nut graph, which is a sentence or two that summarizes the theme of your piece in a nutshell. This is akin to the thesis statement you learned about in high school.

The intro can then include two or three sentences of the most important background information: context, definitions, history or trends to help the reader to understand the story.

## The style

### Active voices carry.

Minimize the "to be" verbs in your writing. Look for ways to inject powerful, active verbs into your piece instead of using is, are, was and were.

"She read my palm and predicted that I would live to a hundred and five, marry three times, and die in a traffic accident." – Haruki Murakami, *Norwegian Wood*

"Lightning streaks like gunfire through the clouds, volleys of thunder shake the air." – Edward Abbey, *Desert Solitaire*

### Vary your sentence and paragraph length.

Short sentences can be more effective than long, complex sentences in getting your point across and keeping the audience's attention.

"He did not know where it came from, the pain, nor why. It had nothing to do with his thoughts. Almost it had nothing to do with him." – D.H. Lawrence, *Daughters of the Vicar*

On the flip side, long sentences can take readers on an adventure of linguistic and expressive significance.

### Dabble in wordplay.

Creative turns of phrase work well in headlines, subheads and leads. Pick a phrase, buzzword or song lyric and apply or change it in an unexpected way that will surprise and amuse your reader. Use subheads to transition between scenes.

### Know when to hold 'em.

Downplay or soften your language when describing serious emotional content, but go over the top – Embellish! Elaborate! – when your topic treads on the lighter side.

"This wallpaper will be the death of me. One of us will have to go." – Oscar Wilde

"I think I may boast myself to be, with all possible vanity, the most unlearned and uninformed female who ever dared to be an authoress." – Jane Austen

### Use a narrative story structure.

The body of your piece should include an introduction, a body and a conclusion.

Build the body of your story around a key inquiry. Explore this theme throughout the piece using techniques such as real-life events or anecdotes to explain the need for the project or initiative, hypothetical situations in which the new innovation would be helpful or case studies that illustrate the problem, solution and results.

Start with the dilemma of someone you interviewed. Engage your audience early with a moment of uncertainty or pivotal reaction to a challenge faced. Spend more time showing the obstacles and less time telling about the solution.

Expose the "why it matters" meaning of the project, profession, partnership or industry. What is uplifting or exhilarating about it?

In the conclusion, restate the thesis or call the reader to take action, and close with a surprising, concise or concrete kicker sentence or quote that swings the story full circle.

### Modulate your modifiers.

Avoid adjectives or adverbs; rather, use your active voice and describe specific things in detail with strong verbs.

"And then – the glory – so that a cricket song sweetens his ears, the smell of the earth rises chanting to his nose, and dappling light under a tree blesses his eyes." – John Steinbeck, *East of Eden*

### Compared to what?

Similes, analogies and metaphors express complex concepts with fewer words. They give people a clearer understanding by illuminating something novel using familiar terms.

"The West has had a way of warping well-carpentered habits and raising the grain on exposed dreams." – Wallace Stegner, *The American West as Living Space*

One question to ask yourself when writing about a complicated topic or large numbers: How would you explain it to your mother, who knows nothing about the topic? Plain language and comparisons to common objects or known quantities can help.

# Explore Safety's electronic toolbox

By Paul Robbins

The Safety and Occupational Health website offers WAPA employees a variety of online tools that are just a click away. Think of it as an electronic toolbox full of safety tools, resources and important reference documents. Here is a brief overview of what is available to WAPA employees right now.

The welcome page has a list of announcements that keep employees up to date with what is happening in the safety world. They include summaries of safety incidents, near misses, safety alerts and product recalls.

There are a number of informative links, such as to the fall protection and regional safety sites, providing information about events, contacts, training and more. There is also a link to the Occupational Safety and Health Administration, presenting OSHA standards, outreach and assistance.

The "Standards Expert" link connects to a portal that accesses nationally recognized consensus standards, such as the National Fire Protection Association.

**Incident Library and Tools**

At the top of the site's main navigation bar is the "Incident Library and Tools" section, which is home to WAPA's Incident Reports, Learning Summaries and Near-Miss Reports.

When someone is seriously injured, an internal review team investigates and prepares an Incident Report. The document presents a scope of the investigation with a description of events, facts, analyses, conclusions, recommendations and other information. Employees can review reports that date back to the 1970s and see how Safety has evolved over the years at WAPA.

Safety prepares a Learning Summary when a safety incident takes place to help others learn

## Upcoming feature: Report a Safety Concern

Have you ever had a safety concern and not known what to do about it? Safety is in the process of developing a new website tool with IT.

The "Report a Safety Concern" feature will enable employees to report concerns and get direct safety manager follow-up.

Employees will be able to fill out a simple electronic form and quickly submit it to the Safety and Occupational Health Council. The appropriate regional safety manager will respond to the concern, follow up with the employee and address corrective actions.

from what occurred. The summary includes a description of events, contributing factors, lessons learned and questions for discussion. These topics help employees understand why the event took place and how to prevent similar incidents in the future.

A near miss is what the National Safety Council defines as, "an unplanned event that did not result in injury, illness, or damage – but had the potential to do so." A Near-Miss Report is filled out by an employee for other employees to learn from. It includes an account of what happened and lessons learned.

Both Near-Miss Reports and Learning Summaries are used as topics during regional safety meetings and tailgate discussions.

### Manuals and policies

What if you have a safety question, but you don't have a safety manual handy? Choose "Safety Manuals" on the navigation bar and you will find manuals and handbooks that offer important direction to employees.

Here you will find the *Power System Safety Manual*, which details our safety rules, as well as the *Power System Maintenance Manual*, *Power System Operations Manual* and other industry standard handbooks.

The site also contains handy links to a variety of other references. These include orders that establish official policies, such as WAPA Order 440.1B Safety and Occupational Health Program, and other policies and guides related to building safety, tire maintenance, claim processing and more.

There are also standardized procedures on specific topics, such as hoisting and rigging, developed and established by professional organizations.

### Forms, training and back issues

Employees will also find links to forms, training modules and even past publications on the site.

For instance, what if you are injured on the job? There are forms and reports to help you, including the WAPA F 5484.1 Individual Incident Report, workers' compensation information and other safety documents.

Employees always have the opportunity to learn more about safety by clicking the "Safety Training" link and watching videos such as "The Employee Safety Orientation" and "Substation Orientation for Non-Technical Visitors." Other information, such as the Substation Orientation for Non-Technical Visitors brochure, is available as well.

Finally, for exhaustive writeups of safety-related topics or to reference previous articles, you can access past issues of our newsletter, *Safety Works*. If you enjoy Safety Corner in *Closed Circuit* every month, *Safety Works* will provide you with even more information on a larger number of topics.

Discover our electronic toolbox of safety; visit the Safety and Occupational Health website today. □

Visit the site at **myWAPA, Departments, Safety and Occupational Health**

*Note: Robbins is a technical writer who works under the Cherokee Nation Strategic Programs contract.*

# Host video conferences safely

By Lodrina Cherne

If you will be hosting a virtual conference, here are some additional steps you should take.

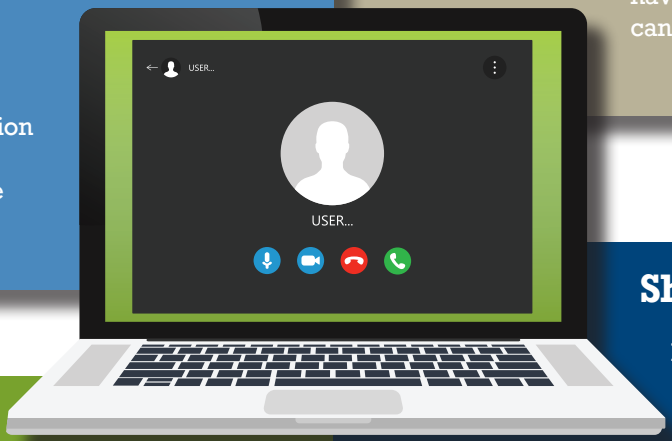
***Note from the editor:*** *Information Technology shared the following videoconferencing tips from the Escal Institute of Advanced Technologies, also known as the SANS Institute, with WAPA employees via email. The article is reproduced below.*

## Require a password

To protect the privacy and security of your conference and control who can join, protect your meeting with a password. This way only people who have the conference password can join the event.

## Inform if recording

If you intend to record the event (and have permission to record), be sure to inform everyone on the conference ahead of time.




## Sharing your screen

If you will be sharing your computer screen at any point, be sure to first close all other applications and remove any sensitive files from your computer's desktop. Also disable any pop-up notifications. This helps ensure you don't accidently share sensitive or embarrassing information while sharing your computer screen. Another option is to consider sharing just the program you want to show instead of sharing your entire computer screen.

## Review attendees

Review the people attending your event. If there is someone you do not know or cannot identify, have that person confirm their identity. If you have any concerns, or if someone is being rude or disruptive, remove them from the conference. Many solutions offer the option to lock the conference once it has begun, so no one else can join unless you let them in. Another option may be to initially place people in a virtual waiting room, so you can approve who joins the call.

These technologies are a fantastic tool and, in many ways, represent the future of how we will work, collaborate, and communicate with others. These simple steps will go a long way to ensure you safely and securely make the most of them. □

*Note: Cherne teaches Windows forensics at the SANS Institute. She is also the principal security advocate at Cybereason.*

# Rapid Recaps

## Pilot receives Award of Merit

On March 30, Aviation Manager **Rich Westra** presented Helicopter Pilot **Todd Slade** with an Award of Merit for Five Years of Accident-Free Flying for the U.S. Department of Energy.

Slade is one of several WAPA pilots. He supports Rocky Mountain Maintenance, Construction, Communication and Lands employees and also serves as Aviation's instructor pilot. He has more than 25 years of experience as a commercial pilot, law enforcement officer and first-responder pilot with Flight for Life.

## Mira Loma High School reaches top eight in National Science Bowl

On May 22, the winners of this year's regional Science Bowl competitions met virtually to compete in the National Science Bowl, testing their knowledge of biology, chemistry, Earth science, physics, energy and math.

Due to the ongoing concerns of the COVID-19 pandemic, the format was different this year, with teams competing in an elimination tournament format. Each round saw the lowest-scoring teams eliminated with the others advancing to another round.

Mira Loma High School, winner of the WAPA-sponsored Sacramento Regional High School Science Bowl, made it to the final eight teams of the competition before being eliminated. *Closed Circuit* congratulates them on their strong showing and thanks all of the students, coaches and volunteers who made this year's competition possible.

## Employees learn about Pride history


On June 15, in celebration of Pride Month, the Office of Economic Impact and Diversity hosted a virtual presentation by LGBTQ Historian David Duffield of The Center on Colfax.

He spoke about the history of the LGBTQ community in the U.S., focusing on the years between 1945 and 1975. He used video, photographs and other historical documentation to illustrate both the discrimination faced by the community and the successes through which it achieved political, social and cultural change.

Duffield manages the Colorado LGBTQ History Project, which was established to collect and preserve oral histories, archive them and educate and make them available to the public.

The Center on Colfax is the largest LGBTQ community center in the Rocky Mountain region. It opened in 1976, providing a voice to Colorado's LGBTQ community and playing a role in statewide initiatives to reduce harassment and discrimination.

# Brief Transmissions

## WAPA selects UGP regional manager

On June 9, WAPA announced its selection of **Lloyd Linke** as senior vice president and Upper Great Plains regional manager, pending approval from the Office of Personnel Management.

Linke began his federal career with WAPA and has also served as the administrator of the former Alaska Power Administration. Most recently he was vice president of operations for UGP.

"Lloyd has over 30 years of experience working in the electrical power industry and brings a wealth of knowledge regarding the operation of the Upper Great Plains Region," said Interim Administrator and CEO **Tracey A. LeBeau**. "His extensive experience with customers, customer groups and regulatory agencies mirrors his active involvement in industry nationwide."

Linke has experience with a number of industry groups, including various committees under the North American Electric Reliability Corporation and the Southwest Power Pool. He also served as director of the Midwest Reliability Organization's board.

"I'm looking forward to my new role within WAPA," Linke said. "WAPA's mission brings significant value to our customers and I'm excited to work with the dedicated and hardworking UGP staff to ensure that our customers continue to receive these benefits and value our partnership."

## Updated state and regional fact sheets available

WAPA has published its updated state and regional fact sheets, reflecting the most recent data from its Fiscal Year 2020 Statistical Appendix.

These fact sheets, as part of the organization's commitment to transparency, provide a clear and simplified understanding of WAPA's presence in each of the 15 states that define its service territory.

To view and download the updated fact sheets, visit **wapa.gov, Newsroom, Fact Sheets**

## Occupational Safety and Health training due July 30

All Department of Energy federal employees must complete the HQ-101DE Federal Employee Occupational Safety and Health training in Learning Nucleus by July 30.

Contractors are required to complete this training only if their employer has elected to comply with title 10 Code of Federal Regulations, part 851 by adopting the DOE's Federal Employee Occupational Safety and Health program.

Please note that after completing the course, employees must complete a brief survey. Failure to complete the survey will result in the course not being marked as complete.

Complete this mandatory training by visiting Learning Nucleus at **learningnucleus.energy.gov**

## Complete Standards of Conduct training

All WAPA federal employees are required to complete the annual Federal Energy Regulatory Commission Standards of Conduct training. Log in to Learning Nucleus to check your due date.

This training covers various SOC requirements as they apply to WAPA's organizational structure. It covers the three primary SOC rules established by FERC Order No. 717, most notable of which for all employees is the No Conduit Rule prohibiting the communication of non-public Transmission Function Information to Marketing Function Employees.

The training also provides overviews of permissible and impermissible communications between WAPA's Transmission and Marketing Functions and of the guidelines that should be followed for meetings between the two.

Complete this mandatory training by visiting Learning Nucleus at **learningnucleus.energy.gov**